

# Claims

[c1] 1. An automotive closure panel, comprising:

a door adapted to pivot about a generally horizontal pivot axis, with said door having a shell defining an interior space within said door;

a first hinge bearing retainer attached to a first end of said door and having a first bearing insert housed within said retainer;

a first pivot post rigidly attached to a structure adjoining a first end of said pivot axis, with said pivot post engaging a bore formed in the interior of said first bearing insert;

a second hinge bearing retainer attached to a second end of said door and having a second bearing insert housed therein;

a second pivot post rigidly attached to a structure adjoining a second end of said pivot axis, with said second pivot post engaging said second bearing insert such that said second pivot post and said second bearing insert are rotationally locked; and

a full floating torsion bar having a first end rotationally grounded within the interior space of said door, and a second end engaged with and rotationally locked with said second bearing insert such that said torsion bar will be subjected to torsional loading as said door is pivoted.

[c2] 2. An automotive closure panel according to Claim 1, wherein

said torsion bar is subjected to a minimal torsional load tending to open the door when the door is in a closed position.

- [c3] 3. An automotive closure panel according to Claim 1, wherein said torsion bar is subjected to a maximum torsional load tending to close the door when the door is in a fully open position.
- [c4] 4. An automotive closure panel according to Claim 1, wherein said first end of said torsion bar is grounded to an anchoring member located within the interior of said door.
- [c5] 5. n automotive closure panel according to Claim 4, wherein said anchoring member is affixed to a portion of said first hinge bearing retainer.
- [c6] 6. An automotive closure panel according to Claim 4, wherein said torsion bar is a straight rod, with the first end of said torsion bar being affixed to an anchoring member located within the interior of said door.
- [c7] 7. An automotive closure panel according to Claim 1, wherein said second bearing insert comprises a metallic core overmolded with plastic.
- [c8] 8. An automotive closure panel according to Claim 1, wherein said first end of said torsion bar is grounded to an anchoring member located within the interior of said door.

[c9] 9. An automotive closure panel according to Claim 1, wherein said first bearing insert and first pivot post are keyed so as to allow said closure panel to be removed from a vehicle when the panel has been opened to a predetermined position.

[c10] 10. An automotive tailgate, comprising:  
a door adapted to pivot about a generally horizontal pivot axis, with said door having a shell defining an interior space;  
a first cup-shaped hinge bearing retainer attached to a first end of said door and having a first bearing insert housed within said retainer;  
a first pivot post rigidly attached to a pillar structure adjoining said first end of said door when the door is in a closed position, with said pivot post engaging a bore formed in the interior of said bearing insert;  
a second cup-shaped hinge bearing retainer attached to a second end of said door and having a second bearing insert housed therein;  
a second pivot post rigidly attached to a pillar structure adjoining said second end of said door when the door is in a closed position, with said second pivot post slidably engaging said second bearing insert such that said second pivot post and said second bearing insert are rotationally locked; and a full floating torsion bar housed entirely within the interior space of the door, with said torsion bar having a first end

rotationally grounded within the interior of said door, and a second end slidably engaged with and rotationally locked with said second bearing insert such that said torsion bar will be subjected to torsional loading as said door is pivoted.

- [c11] 11. An automotive tailgate according to Claim 10, wherein said torsion bar is subjected to a minimal torsional load tending to open the door when the door is in a closed position.
- [c12] 12. An automotive tailgate according to Claim 10, wherein said torsion bar is subjected to a maximum torsional load tending to close the door when the door is in a fully open position.
- [c13] 13. An automotive tailgate according to Claim 10, wherein said first end of said torsion bar is grounded to an anchoring member located within the interior of said door, with said anchoring member being fastened to a portion of said first hinge bearing retainer such that the anchoring member passes into the interior of the tailgate through a port formed in said shell.
- [c14] 14. An automotive tailgate according to Claim 10, wherein said first end of said torsion bar is grounded to an anchoring member located within the interior of said door.
- [c15] 15. An automotive tailgate according to Claim 10, wherein said first bearing insert and first pivot post are keyed so as to allow said tailgate to be removed from a vehicle when the panel has

been opened to a predetermined position.

[c16] 16. A method for constructing an automotive tailgate, comprising the steps of:

fabricating a door adapted to pivot about a generally horizontal pivot axis, with said door having a shell defining an interior space, and with said shell having a first end and a second end;

attaching a first hinge bearing retainer to said first end of said shell, and positioning a first bearing insert within said retainer; providing a first pivot post rigidly attached to a body structure adjoining said first end of said shell when the door is in a closed position, with said first pivot post engaging a bore formed in the interior of said first bearing insert;

providing a second hinge bearing retainer attached to a second end of said shell and having a second bearing insert housed therein;

providing a second pivot post rigidly attached to a pillar structure adjoining said second end of said door when the door is in a closed position, with said second pivot post engaging said second bearing insert such that said second pivot post and said second bearing insert are rotationally locked; and

providing a full floating torsion bar housed entirely within the interior space of the door, with said torsion bar having a first

end rotationally grounded within the interior of said door, and a second end engaged with and rotationally locked with said second bearing insert such that said torsion bar will be subjected to torsional loading as said door is pivoted.